

# Knowledge Management Newsletter

Issue 6 - Fall 2016

## Stealth Learning

By Charles White

How do you share culture and values without giving boring lectures? If the institution has an exciting history, an answer may be “gamification” in which game design elements are used to capture learner interest.

The Mysteries and Curiosities project began on a dare. JPL media designer Luke Johnson was challenged to visit the entire Lab on foot by order of building number. JPL has 144 unique buildings within its 177-acre campus, numbered sequentially in the order by which they were funded. Hence, the building number gives no clue to its geographic location. Luke crisscrossed the Lab for 22 hours, walking 52.2 miles over the course of 4 days in the summer of 2011.

During his trek, Luke was amazed to discover many oddities, and he made note of the interesting facilities and people he encountered.

Today, this project has evolved into a paper map provided to all new hires. The JPL Mysteries and Curiosities tour is also available as a smartphone app in which the players scan a QR code at each site and earn points in a self-paced competition.



JPL interns peruse map at Skeleton site.  
Note QR code affixed to wall on right.

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## KM Champion's Corner

## Succession Planning

By Jan Chodas



One of the core functions of a line manager is to put in place a robust succession planning strategy. Each JPL directorate must make plans to accommodate the effects of staff turnover and mitigate the loss of their critical knowledge, and to address the impacts of emerging technologies upon its talent bank. The approach taken by the Office of Safety and Mission Success (5X) is to conduct succession planning as part of its overall OSMS Strategic Plan for mission success

Each 5X section and division periodically updates its matrix of core skills. The managers also identify new skills, such as *additive manufacturing assurance*, that are expected to become critical over

the next five years with the onset of new technologies. The leadership team identifies core skills that are one-deep (or zero-deep), analyzes the demographics within key technical disciplines, accounts for attrition, and formulates tactical plans. The directorate also assesses the JPL business base to project the workforce needed for current, future, and proposed projects.

To date, 5X has been successful in avoiding personnel gaps in critical disciplines. Techniques utilized include partnering junior with senior personnel, cross-training personnel both internally and from outside of 5X, recruiting from outside JPL, and outsourcing certain tasks.

The 5X Strategic Plan is assessed at the directorate level quarterly, based on more frequent assessments by the 5X sections. In addition to talent management, the 5X Strategic Plan covers such topics as customer satisfaction, process improvement, facility and IT infrastructure improvements, and infusion of new technologies.

## NASA & JPL Use Crowdsourcing to Solve Technical Problems

By David Oberhettinger

JPL and NASA are accessing the crowd to solve pressing technical problems or develop a needed product by issuing “challenges” in which useful solutions are awarded recognition and prizes. Data from one crowdsourcing platform, InnoCentive, suggest that as much as 70 percent of successful challenge solutions are solved by individuals outside of the challenge’s specific technical domain—e.g., by amateurs. Recent examples of successful challenges include:



- **[Mars balance mass](#)**. Find a dual purpose for the balance mass that is jettisoned from Mars landers to balance the lander during Entry, Descent, and Landing.
- **[Planetary data systems: Cassini rings](#)**. Develop algorithm to find anomalies and features of interest in the rings of Saturn that are not otherwise detectable due to false positives.
- **[Asteroid tracker](#)**. Optimize the use of an array of radar dishes when tracking Near Earth Objects.
- **[Converting in situ materials](#)**. Seek systems that can convert in situ materials into interlocking structural elements for construction that can support exploration on a planet.
- **[Asteroid Data Hunter](#)**. Create an algorithm to detect moving objects using Catalina Sky Survey (CSS) data.

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# Stealth Learning

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Ryan Bayfield, a recent hire, stated, "The game aspect of the tour made me very eager for my lunch breaks, and I planned to maximize the number of curiosities I could find in one tour. Some of the locations are hard to find. I lacked building access for the Atomic Clock, but a passerby stopped to explain his job and the importance of the clock. I now realize JPLers are really proud of their work and they are more than happy to share their knowledge."

When the network detects that an employee has captured all the sites, an e-mail directs the employee to report to the Director's Office where they are rewarded with a pendant. Ryan said, "It was a little disconcerting as a JPL new hire to be sent a message to come to the Director's Office: I didn't know if I was in trouble or not. When I arrived, I was presented the Mysteries and Curiosities completion medal.



Ryan Bayfield displays his pendant, a winged helmet over a QR code

What a relief and a really nice keepsake."

In contrast, Jane Houston Jones is a 13-year JPL employee. She took on the challenge as physical therapy after a hip replacement, and she found that the tour stimulated many conversations. While capturing a QR code, she would often learn about ongoing activities at the site and also talk about her duties in Planetary Mission Communications and Engagement. Jane has enjoyed making new contacts in different fields and joining summer interns on their campus tours.

Stealth learning opportunities abound for JPLers who seek to satisfy their curiosity and ask questions. Employees are encouraged to unchain themselves from their desks and take advantage of their co-location with so many smart and engaged peers.

## NASA & JPL Use Crowdsourcing to Solve Technical Problems

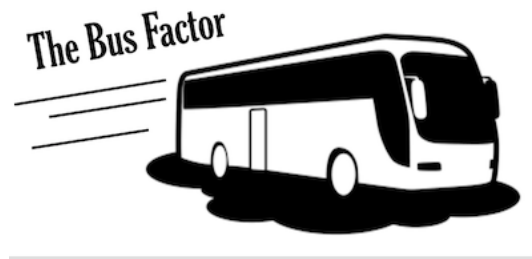
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To view the winning concepts for the five challenges above, see <http://oce.jpl.nasa.gov/ocko/winners.html>.

Crowdsourcing communities tend to be very large, and are curated by companies that provide resources and tools. For example, GrabCAD fosters a community of 3.2 million mechanical engineers and CAD designers. Topcoder incentivizes their 998,000 participating coders to compete for gamification scores-- and even for job offers. These communities can be effectively utilized either by issuing them challenges to solve a technical problem, or by seeking very specific expertise needed to develop a product or service. Over the past ten years, crowdsourcing has fundamentally changed the way industry innovates. A recent [Mars Space Pioneering challenge](#) generated almost 800 submissions. Crowdsourcing challenge winners have included JPL's Jason Rhodes and Gabriel Udomkesmalee.

## For Your Consideration

**"The Bus Factor."** The widespread capture and sharing of key knowledge increases the *bus factor*-- the number of employees that would have to be run over by a bus before JPL would lose an important technical capability.



## JSearch Gets an Upgrade

By Ricky Ma

JSearch, the multi repository-spanning search tool featured on the JPL Space internal website has been upgraded. It now provides for:

- More granular searches, with new options to search selected repositories and file types
- Improved integration with JPL Tube: a search within JPL Space can bring up a video snippet associated with the search terms
- Call out boxes that provide a service description-- for popular search terms like "Gateway" and "Large File Transfer."

JPL JPL Space | JPL | Caltech | NASA

## JPL SPACE

A future planned upgrade will search JPL lessons learned within the NASA Lesson Learned Information System (LLIS).

The **JPL Knowledge Management Newsletter** is intended to promote the capture, retention, and sharing of JPL intellectual capital. Please alert us to any ongoing knowledge activities:

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